

ANNUAL REPORT OF THE OHIO ACADEMY OF SCIENCE 1957

Organized 1891 Incorporated 1892
Affiliated with the American Association for the Advancement of Science

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Executive Secretary, Junior Division

GEORGE G. ACKER

Assistant Executive Secretary, Junior Division

ROBERT E. MCKAY

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- | | |
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| A. B. Chm. Subsection on Genetics: N. S. FECHHEIMER | H. Science Education: P. DYE |
| C. Geology: J. R. COASH | I. Anthropology and Sociology:
C. G. SWANSON |
| D. Medical Sciences: K. P. KLASSEN | J. Conservation: E. C. MYERS |
| E. Physics and Astronomy: H. H. LOUDEN | |

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- | | |
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| D. Medical Sciences: L. C. HUNSICKER | J. Conservation: I. I. DICKMAN |
| E. Physics and Astronomy: M. L. POOL | |

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R. W. DEXTER, R. M. GEIST, R. E. MCKAY

Nominating

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Academy Librarian, DONALD PEARCE, Chairman

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THE SECRETARY, Chairman

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W. C. BEAVER..... Term expires 1960

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J. T. MADDOX, Chairman. Term expires 1958
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A. G. MCQUATE..... Term expires 1960

Resolutions

R. V. BANGHAM, Chairman. Term expires 1959
K. L. KELLEY..... Term expires 1958
F. O. HAZARD..... Term expires 1960

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 C. V. RILEY
 VIOLET STRAHLE
 E. VAN CLEEF
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1. On the Joint Administrative Board of The Ohio Journal of Science:
 C. E. HOEL..... Term expires 1959 W. P. SPENCER..... Term expires 1961
2. On the Council of the American Association for the Advancement of Science:
 R. W. DEXTER; G. W. BURNS (alternate)

The Council for 1957-1958

G. G. ACKER
 R. V. BANGHAM
 E. L. BRAUN
 G. H. BROWN
 G. W. BURNS
 J. R. COASH
 J. H. COOPER
 H. A. CUNNINGHAM
 R. W. DEXTER
 I. I. DICKMAN
 P. DYE
 N. S. FECHHEIMER
 R. M. GEIST
 C. E. HOEL

L. C. HUNSICKER
 D. P. IRISH
 K. P. KLASSEN
 H. V. KNORR
 W. C. KRAATZ
 H. H. LOUDEN
 J. F. LOUNSBURY
 J. T. MADDIX
 R. E. MCKAY
 A. G. McQUATE
 E. C. MYERS
 E. F. PADDOCK
 D. PEARCE

H. L. PLAINE
 M. L. POOL
 R. A. POPHAM
 W. A. RICE
 C. E. RONNEBERG
 P. ROTHMUND
 W. P. SPENCER
 W. D. STULL
 T. C. SURREARER
 C. G. SWANSON
 J. VERDUIN
 E. G. WESTON
 W. R. ZEITLER

REPORT OF THE SIXTY-SIXTH ANNUAL MEETING OF THE OHIO ACADEMY OF SCIENCE

The 66th annual meeting was held on the campus of Bowling Green State University at Bowling Green during April 18 to 20, 1957. It was the first Academy meeting to be held at that institution. A total of 494 registered for the meetings of the Senior Division. Dr. John R. Coash and his local committee made the arrangements for meetings, field trips, housing, and dining facilities. The Executive Committee and the Council held meetings on April 18 for the transaction of business.

On Friday, April 19, ten sections and one subsection held meetings in the following fields: Zoology, Plant Sciences, Genetics, Geology, Medical Sciences, Physics and Astronomy, Geography, Chemistry, Science Education, Anthropology and Sociology, and Conservation. More than 100 research papers were presented and discussed. A special feature entitled "Explosions in Hospitals: a Live Demonstration" was presented by Dr. George J. Thomas under the auspices of the Medical Science Section. Symposia and a panel discussion were held in the sections on Physics and Astronomy, Medical Sciences, and Conservation. Under the auspices of the Geology section a special public lecture on "A Geologist in Tasmania" was given by Dr. Kenneth E. Caster in the late afternoon. Throughout the day on Friday the Junior Division sponsored the Ninth Annual State Science Day in which 620 public school pupils participated. These had been selected from 3556 students who took part in the seven District Science Day meetings held earlier throughout the state. Sectional meetings were suspended at 11 A.M. to give all members of the Senior Division an opportunity to view the projects and exhibits of the junior members. Commercial exhibits were presented by six companies. A tea was held Friday after-

noon for visiting ladies. Wives of science faculty members of Bowling Green State University and of academy officers served as hostesses.

The annual banquet and business meeting were held in West Dining Hall of Founder's Quadrangle Friday evening. Dr. John R. Coash served as toastmaster. Greetings from Bowling Green State University were given by Provost Kenneth H. McFall and the response was made by Dr. Rush Elliott, Dean of Ohio University College of Liberal Arts and Sciences. Dr. Robert M. Geist, president of The Ohio Academy of Science, delivered his presidential address entitled, "Human Engineering." Professor Robert E. McKay, as Executive Secretary of the Junior Division, announced awards to outstanding high school teachers and science departments. At the business meeting officers were elected to serve for the coming year. Appointments were also announced. These new officers and committee members are listed at the head of this annual report. Thirty-nine members of the Academy were announced as newly elected Fellows. Their names and section letters are as follows:

D—M. ALPERT	J—C. L. HAHN	J—K. N. MORSE
J—J. M. ANDERSON	G—W. H. HALL	C—C. F. MOSES
D—C. G. BARBER	B—L. C. HUNSICKER	D—E. OGDEN
H—MRS. M. R. BOWMAN	G—R. G. JOHNSON	H—L. P. ORR
A—N. W. BRITT	D—J. P. KEMPH	A—H. L. PLAINE
D—J. H. CARSON	D—W. W. KLEMENT	E—B. PODOLSKY
D—MRS. R. T. D'ALMAINE	D—C. D. LEAKE	D—R. A. SEARS
A—C. C. DAVIS	C—K. E. LIMPER	D—W. M. SILBERNAGEL
D—W. B. DEICHMANN	F—J. F. LOUNSBURY	G—D. R. SPESSARD
D—M. J. FOLKMAN	D—D. A. MACEDONIA	D—E. A. SPRAGUE
C—G. W. FRANK	D—SISTER M. A. McDOWELL	A—W. F. WALKER, JR.
B—J. E. FRITCHLEY	J—R. L. MEEKER	J—C. V. YOUNGQUIST
C—C. E. GRAHAM	C—W. M. MERRILL	H—W. R. ZEITLER

Dr. Walter C. Kraatz presented the resolutions prepared by the Resolutions Committee.

On Saturday the section of Physics and Astronomy held a joint meeting with the Ohio Section of the American Physical Society. The section of Geology held an all-day field trip. Two other field trips were sponsored jointly by the sections of Zoology, Plant Sciences, and Conservation.

Respectfully submitted,

RALPH W. DEXTER, *Secretary*

REPORT OF THE EXECUTIVE COMMITTEE AND THE COUNCIL

The Executive Committee met on November 30, 1956, and on April 18, 1957; the Council met on December 1, 1956, and on April 18, 1957. The fall meetings were held at The Ohio State University in Columbus and the spring meetings were held at Bowling Green State University. Following is a brief summary of the more important actions taken.

1. *Meeting of the Executive Committee.*—A gift of \$25.00 from Dr. C. M. Goethe was assigned to the work of the Junior Division. The Academy was authorized to contribute \$12.00 to the Academy conference for 1955 and again for 1956. The Trustees of Research Funds were given instructions to use their own judgement in awarding funds to either college instructors and graduate students or to high school students. A former directive from the A. A. A. S. restricting A. A. A. S. grants to high school students was rescinded. A budget of \$75.00 was approved for the use of the Director of Public Relations. An expense account up to \$150.00 was made available to the Executive Secretary of the Junior Division. The Treasurer was authorized to purchase one-half share of stock in Banc-Ohio. G. G. Acker was appointed as Executive Secretary of the Junior Division and R. E. McKay was appointed as Assistant Executive Secretary of the Junior Division. Donald Pearce was appointed to fulfill the unexpired term of Morton Coburn as Academy Librarian. Dr. John L. Crites was appointed to replace Sylvan Michaelson as a District Representative in the Junior Division since Dr. Michaelson would be out of the country for two years. Dr. Glenn Blaydes was appointed to replace Dr. Richard Goldthwait as Chairman of the Trustees of Research Funds since Dr. Goldthwait was leaving the country. It was agreed to hold three meetings a year rather than two. A meeting in the early fall would be scheduled for 1957.

President Geist appointed the retiring secretary, Dr. Ralph W. Dexter, to be a committee of one to act as Academy Historian. The President also appointed a new temporary committee on Institution and Corporation Members consisting of Dr. Paul Rothemund, Chairman, Dr. George H. Crowl, and the treasurer Dr. Elton F. Paddock. The former temporary committees on Ohio Flora and Training and Certification of Science Teachers were reappointed with present personnel, but with the addition of Dr. T. R. Fisher to the former committee.

Dr. W. C. Kraatz was selected to be the Local Chairman for the annual meeting to be held at The University of Akron in April, 1958. Dr. George W. Burns was appointed as an alternate A. A. A. S. representative. It was announced that Dr. Thomas H. Langlois had been selected as the new Book Review Editor for *The Ohio Journal of Science*. A suggestion from Dr. F. H.

Krecker that the Academy provide councilors to advise high school students interested in a career in science was acted upon. A call for questions and requests for interviews will be published in the *Newsletter*. Replies will be handled by the Executive Secretary of the Junior Division who will make efforts to provide some qualified scientist living near the students concerned to answer questions and guide them toward proper training for a career in science.

2. *Meeting of the Council*.—Announcement was made of the grant of \$12,000 over a period of three years to the Academy for the work of Dr. E. Lucy Braun on the "Woody Plants of Ohio" which will be the first unit in the *Ohio Flora* project planned by the Committee on Ohio Flora, of which Dr. Braun is the chairman. A gift of \$1,000 to the Academy by Dr. Charles F. Kettering was also announced.

A discussion was held on the matter of scheduling the meetings of the Junior and Senior Divisions. Some members expressed a desire to hold these meetings on separate days rather than simultaneously as in the past. After much discussion it was agreed to suspend the sectional meetings at 11 A.M. to make available a large number of judges and to permit all senior members an opportunity to view the exhibits of the Junior Division. This would be tried as an experiment at the Bowling Green meeting and each section at its business meeting would vote as to its preference for the future. A report would be sent to the Executive Committee for further consideration.

A discussion was also held concerning the matter of requiring abstracts for all titles submitted for the program, how the abstracts should be distributed, and what arrangements could be made for their publication. The matter was placed on the agenda for sectional meetings to discuss and vote as to preference and to report such action to the Executive Committee for further consideration.

Reports were presented by all officers and committee chairmen. Their annual reports are presented in the following pages. Membership in the Senior Division as of April 18, 1957, was 1172, divided among the sections as follows: Zoology, 265; Plant Sciences, 187; Geology, 184; Medical Sciences, 109; Physics and Astronomy, 63; Geography, 40; Chemistry, 111; Science Education, 95; Anthropology and Sociology, 28; and Conservation, 90. The next annual meeting was scheduled for The University of Akron on April 10-12, 1958.

Respectfully submitted,

RALPH W. DEXTER, *Secretary*

REPORT OF THE TREASURER FISCAL YEAR 1956

ACADEMY BUSINESS

	1956	1955
RECEIPTS:		
Bank Balance, January 1.....	\$ 4,803.54	\$3,853.96
Membership Dues.....	4,145.50	4,175.50
Sale of Publications.....	6.06	42.34
U. S. Bonds Cashd.....	150.00	—
Interest U. S. Bonds.....	47.50	47.50
National Science Foundation Grant.....	4,800.00	—
Exhibitor Fees (commercial).....	—	50.00
Gift—C. F. Kettering.....	1,000.00	750.00
Gift—C. M. Goethe.....	50.00	—
Junior Academy.....	801.15	746.30
	<u>\$15,803.75</u>	<u>\$9,665.60</u>
EXPENDITURES:		
Subscriptions and Engraving, Ohio Journal of Science.....	\$ 2,089.62	\$3,047.06
Printing Annual Report.....	261.70	118.18
Printing Announcements and Notices.....	434.38	326.30
Postage, office supplies, bank charges, auditing and other administrative expense.....	596.50	624.67
National Science Foundation Grant.....	704.87	—
Junior Academy.....	958.91	734.11
Academy Conference.....	—	11.74
Banc-Ohio Stock, ½ share.....	22.00	—
Bank Balance, December 31.....	10,735.77	4,803.54
	<u>\$15,803.75</u>	<u>\$9,665.60</u>
Excess Income over Expense.....	\$ 5,932.23	\$ 917.08

RESEARCH FUND

RECEIPTS:

Bank Balance, January 1.....	\$ 121.44	\$ 233.85
Interest, Savings Account.....	73.64	53.34
U. S. Bond Cashed.....	100.00	—
Interest, U. S. Bonds.....	7.50	7.50
Dividends, Banc Ohio Stock.....	41.25	41.25
Grant, A.A.A.S.....	255.00	369.50
	<hr/>	<hr/>
	\$ 598.83	\$ 705.44

EXPENDITURES:

Grants.....	—	\$ 547.00
Water Mites, Robert M. Crowell.....	55.00	—
Cincinnati Bats, Elizabeth Smith.....	50.00	—
Bank Service Charges.....	5.75	2.65
Interest still in Savings Account.....	39.29	34.35
Bank Balance, December 31.....	448.79	121.44
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	\$ 598.83	\$ 705.44
Excess Income over Expense 1956.....	\$ 327.35	—
Excess Expense over Income 1955.....	—	\$ 97.05

Respectfully submitted,

ELTON F. PADDOCK, *Treasurer*

REPORT OF THE ACADEMY LIBRARIAN

The Librarian is pleased to inform the Academy that its official *Journal*, as of 15 April 1957, is being used to secure exchange publications from 527 institutions. Of these 394 are foreign and 133 domestic. This represents a net increase of 29 over last year; actually 32 were added and 3 exchanges were dropped—one for lack of reciprocation, one because of change of issuing authority, and one because the issuing agency went out of existence. A large percentage of these additions were behind the Iron Curtain where we have had much freer contact than previously.

An additional 23 institutions are at present being contacted and we hope for successful exchange arrangements with them.

No sales of Academy publications were made through the Librarian during the past year.

Respectfully submitted,

DONALD J. PEARCE, *Librarian*REPORT OF THE JOINT ADMINISTRATIVE BOARD OF
THE OHIO JOURNAL OF SCIENCE

The annual meeting of the Joint Administrative Board of The Ohio Journal of Science was held at Columbus on April 13, 1957. The meeting was called to order by Board Chairman Spieker. Present were Mr. E. M. Spieker and Mr. B. S. Meyer, representing The Ohio State University, Mr. C. E. Hoel and Mr. A. W. Lindsey, representing The Ohio Academy of Science, and Mr. H. L. Plaine and Mr. R. A. Popham, of The Ohio Journal of Science staff.

Mr. Meyer was elected chairman of the board for the year 1957-58.

Mr. Spieker notified the board that, having served as a member and chairman of the board for ten years or more, he intended to ask President Fawcett to select someone to replace him on the board. It is Mr. Spieker's opinion that the O.S.U. members of the board should serve short, staggered terms much as the O.A.S. members do.

The report of the Business Manager was approved as read. This report, which accompanies these minutes, is mainly in the form of a financial statement for Volume 56. Mr. Popham reported that, with the money appropriated in the O.A.S. budget, the Journal should be able to meet all expenses and retain about the same amount of reserve funds that it had at the end of 1956.

The report of the Editor, Mr. Plaine, was approved as read. A copy of this report is attached to these minutes. The editor indicated that the Journal is only 3 to 5 months behind in the publication of papers and book reviews. It was pointed out that this is an unusually favorable state of affairs when the much longer lag periods of other scientific journals is considered.

Upon hearing Mr. Plaine's request for a ruling, the board reaffirmed its policy of excluding technological papers from the Journal.

The board accepted, with regret and with sincere thanks for a job well-done, the resignation of Mr. Fisk, who has served as Book Review Editor since July 1952.

The following staff members were elected for the year 1957-58: Mr. Plaine, Editor; Mr. Popham, Business Manager; and Mr. T. H. Langlois, Book Review Editor.

Mr. Lindsey expressed the appreciation of the Academy for the efficient work of the Journal staff members during the past year.

Respectfully submitted,

RICHARD A. POPHAM, *Secretary of the Board*

THE OHIO JOURNAL OF SCIENCE

VOLUME 56—FISCAL YEAR 1956

BALANCE SHEET

RECEIPTS:

Bank balance at beginning of period.....	\$2,715.11
O.S.U.—paid for subscriptions.....	2,500.00
O.A.S.—paid for subscriptions.....	1,942.00
Non-members—paid for subscriptions.....	670.00
Separate numbers, volumes and reprints sold.....	385.38
50 year index sold.....	54.00
O.A.S.—paid ½ cost of plates.....	258.46
O.A.S.—paid for annual report.....	147.62
Miscellaneous.....	295.98
Advertisements.....	478.96
	<hr/>
	\$9,447.51

EXPENDITURES:

Spahr and Glenn—printing O.J.S.....	\$5,475.96
Bucher Engraving—plates.....	519.08
Postage and express.....	170.15
Secretary and labor.....	100.50
Office expenses and bank charges.....	163.54
Advertising of the O.J.S.....	1.10
Reprints.....	3.20
Refunds.....	.50
Miscellaneous.....	262.16
Bank balance at end of period.....	2,751.32
	<hr/>
	\$9,447.51
Cost of supplying one volume of six numbers.....	\$3.163

THE OHIO JOURNAL OF SCIENCE

REPORT OF THE EDITOR OF VOLUME 56, 1956,
to the Joint Administrative Board

Volume 56 of The Ohio Journal of Science contained 408 pages, of which 354 pages were devoted to 46 scientific papers in 8 fields of science (as designated by sections of The Ohio Academy of Science); 14 pages were devoted to affairs of the Academy; 12 pages to advertising; and 28 pages to announcements, book notices, index, and routine journal copy.

Dr. Frank Fisk, *Book Review Editor*, reported 43 book notices or reviews published in volume 56 and 59 books presented to The Ohio State University Libraries in December.

Respectfully submitted,

HENRY L. PLAINE, *Editor-in-Chief*

REPORT OF THE DIRECTOR OF PUBLIC RELATIONS

Apprising the general public of the activities of the Academy, aside from the annual meeting and the Junior Division competition, has, until this year, not been given serious attention. Tradition has determined that the work of our scientists speak for itself, primarily in scientific circles. This tradition of modesty, together with inaccuracies born of faulty reporting in the press and the requirements of condensation in newspapers, has made scientists reluctant to favor any strong program of "publicity."

As our social climate has changed, however, two conditions have interposed themselves between tradition and the earnest and honest motives of the modest scientist. One is the

need for attracting more and better science students to careers in science, a problem necessitating long-range "publicity," and the other is the false but quite evident belief among the non-scientific citizenry that whatever is not given substantial publicity may be valueless. These attitudes can be ignored at the risk of having other agencies which are responsible for planning the society's future undertake the enlightenment of the public, or can be understood by scientists to the extent of satisfying the expectations of the public by giving credit publicly to scientists and their contribution to the society.

Since December I have issued six sets of news releases containing from four to six items each. These have been mailed to approximately one hundred and thirty Ohio newspapers in a form ready to set to type. On the supposition that most newspapers prefer brief accounts of general interest to lengthy scientific articles, all the items were less than two hundred words. Information for the releases was obtained from several sources. The Secretary sent news about members and about the Academy's activities in general. The Junior Division *Newsletter* was combed for topics. Twenty members giving papers at the annual meeting were asked to submit abstracts of their work; they were selected from advance copies of the Program on the basis of my judgment of the newsworthiness of their titles.

A file of clippings has been begun, contributed mainly by members of the Council at my request from their own local papers and news bureaus. That some of our material is acceptable to the newspapers is evident from the growing file. It is equally evident, however, that we must consult experts, such as science editors of the large dailies, to make our modest funds go farther. There is almost no way to justify expenses without subscribing to expensive clipping services. But in spite of the reservations I have about the success of this small beginning, I am confident that an important step has been taken toward a desirable and dignified presentation of Academy activities to the public.

There is no way we can estimate two accomplishments that are bound to result from a constant stream of news items: first, young individuals who are making decisions for their life's work may by chance decide to become scientists upon reading a news item; if this should occur only a few times in the course of a year, it could be said that the effort and energy and funds expended have been justified. But a greater second accomplishment is the likelihood that the general public, through this means, will increase its attention to science education; and the critical position the public occupies as the controlling influence in improving schools and hiring teachers will be correctly oriented in communities where so much of the future of science is even now taking shape at the "grassroots" level and a more vital service can thus be performed by our Office of Public Relations.

Respectfully submitted,

LINCOLN C. PETTIT, *Director of Public Relations*

REPORT OF THE EXECUTIVE SECRETARY OF THE JUNIOR DIVISION, OHIO ACADEMY OF SCIENCE

This report closes the ninth year of the activities of the Junior Division of The Ohio Academy of Science, and perhaps the most successful year thus far, at least from the standpoint of the number of public school students enrolled. A total of 3556 junior and senior high school students participated in the seven District Science Days over the State.

March 23—Miami University.....	484
Muskingum College.....	125
March 30—Ohio State University.....	801
April 6—Ohio University.....	184
—Kent State University.....	456
—Bowling Green State University.....	1149
—Wittenberg College.....	357

From a total enrollment of only 78 at the First State Science Day at Denison University in 1949, the number has increased to about 620 this year.

It has certainly been gratifying to see the increasing interest which the Senior Academy has shown for this program. Various industries throughout the state have begun to show interest in our program. High School Teachers have certainly been enthusiastic for the program.

This year, three issues of the *Newsletter* have been published thus far, with a fourth to be put out directly after the State Science Day. The *Newsletter* has been sent to all science teachers over the state, in so far as the list could be determined. All issues have been sent to the Academy members, while the first issue was sent to all public school superintendents.

The Academy has granted seven "Outstanding Teacher Awards" during the year, one in each district. The Kroger Co. has very graciously presented an award with a stipend to seven high schools during the year for outstanding participation of their students in science and in our program. This will be the second year that the Owens-Illinois Glass Co. has presented a

set of glasses to all entrants in the State Science Day. Three more industrial firms have expressed an interest to participate in some way.

In February, the Executive Secretary of the Junior Division attended a national conference in Chicago where representatives of the various state Junior Academies assembled to discuss our common problems. Only one state has a larger number of junior members enrolled, and it seemed evident that our program ranked among the top in the country. It seems evident at this time that by fall there will be a new district formed at Heidelberg College. In order to have a better equality in district sizes, more districts will doubtless be formed in the future.

Because of certain involvements, I find it necessary to step down from the job of Executive Secretary of the Junior Division. Mr. Gerald Acker has been appointed my successor by the Executive Committee of the Senior Academy and I am sure that Mr. Acker will do an excellent job. I shall serve as his assistant.

Respectfully submitted,

ROBERT E. MCKAY

REPORT OF THE OHIO FLORA COMMITTEE

This report is divided into two sections:

1. Work on "Woody Plants of Ohio"—that part of the "Vascular Flora of Ohio" currently supported by a National Science Foundation grant.

This will be a book, the contents as outlined here:

Introduction:

Scope of work; nomenclature; herbarium records and permanent file; physical features of Ohio with maps (physiographic divisions, glaciation, lithology, etc.); natural vegetation.

Systematic Section:

Keys to genera

Systematic text—information about families, genera, and species, with keys to species.

Illustrations of a large proportion of the species (leaves, flowers and fruits—of some species, winter twigs)

Maps showing Ohio distribution of all native species.

Glossary

Index

The systematic section, of some 350 to 375 typed pages, is now in essentially complete form (except for the keys to genera) and is being revised where further study of specimens makes this necessary. The complete manuscript of the genus *Crataegus* (37 pp.) has been received from E. J. Palmer, the specialist in this genus, and is incorporated in the typed text.

A large number of beautiful illustrations have been drawn by the artist employed with National Science Foundation funds.

Preliminary Ohio distribution maps have been made for all native species.

A great many additional records have been added during the past year from specimens deposited in the O.S.U. Herbarium, many of which were collected by Dr. E. M. Herrick.

About 70 percent of the O.S.U. herbarium specimens of woody plants have been checked, i.e., about 8000 sheets, and those on which county records are based are marked on specimen and on corresponding herbarium slip.

Another year's work should see "Woody Plants of Ohio" well along toward completion. Completion of work on woody plants will mean that work on about $\frac{1}{2}$ of Ohio's species (and probably $\frac{1}{2}$ of the specimens) will be in such form that it can readily be modified and incorporated in the complete Flora.

2. Work on other parts of the "Vascular Flora of Ohio."

The annual meeting of the Flora Committee was held in Columbus on March 16, 1957, at which time the flora project as a whole was discussed, as well as the problems arising in connection with woody plants.

In as far as possible, progress will be in systematic order, which means that the monocots as a whole will be started as soon as work on woody plants has reached a stage permitting this.

Dr. Clara Weishaupt is continuing work on the grasses, which group contains a considerable fraction of all monocots.

The study of legumes by Dr. Gambill of Ohio University is continuing.

Significant progress has been made with the Compositae; Dr. Long of Ohio Wesleyan University hopes to have a preliminary list prepared by this summer.

The committee will continue to encourage work on any group, by any qualified worker, with the understanding that the committee reserves the privilege of rearranging or rewriting, if necessary, for unity of treatment.

Respectfully submitted,

E. LUCY BRAUN, *Chairman*

REPORT OF THE COMMITTEE ON TRAINING AND
CERTIFICATION OF SCIENCE TEACHERS

During the course of the first year's work the committee was divided into sub-committees as follows:

Sub-committee No. 1—Pettit and Linscheid

Sub-committee No. 2—Crowl, Van Cleef, and Beaver

Sub-committee No. 3—Linscheid, Fullerton, Porter, and Baird

Sub-committee No. 4—Strahler, Coash, Corwin, Wilson, Van Cleef

Sub-committee No. 5—McGrath, Longbrake, Beaver, Coash, Buckingham, and Herrick

To the original list appointed last April have been added the names of Dr. J. H. Buckingham, Dr. John Coash, Dr. Charles Riley, Dr. George Baird, and Dr. J. Arthur Herrick. The first named committee member on each sub-committee was chairman of the group.

Much work by the committee was done through correspondence. In addition to the correspondence work the committee had two meetings during the year; one on the afternoon of Saturday, December 1, 1956; the other on Saturday forenoon and afternoon, February 16, 1957. Both meetings were held at The Ohio State University, Columbus, Ohio, and both were well attended. The willingness of the majority of the committee members to travel long distances to these two meetings and to invest considerable time and money on this undertaking indicates that its members are interested in our problem and willing to work at it.

One problem was to write down some of the fundamental considerations or criteria that might very well be used as guides in our further work. Pettit and Linscheid were given this task because these two men both attended in 1955 the North Central Conference on Biology Teaching held at Cheboygan, Michigan.

Another problem was to make some study of the mechanics of certification and in so doing to make personal contact with the appropriate person or persons in the State Department of Education. It seemed wise also to try to let the certification authorities know that we, as representatives of The Ohio Academy of Science, are very much interested in certification and that while we are in no way desirous of dictating certification requirements, we are intensely interested and will be glad to help in any way that we can be of assistance. Crowl, Van Cleef, and Beaver carried through this undertaking in a fine way. The Academy must see that the fine relationships started by this sub-committee are continued and further strengthened. This sub-committee obtained and reported some very pertinent information.

A third problem, a study of the pre-service and in-service training of elementary teachers in science, proved to be one of the most promising fields for investigation. This committee, made up of Linscheid, Fullerton, Porter, Riley, and Baird, has worked hard. The members conveniently located held one extra all-day meeting at Kent State University. Two major enterprises are under way. The first is an inquiry into the present conditions of elementary science teaching. The report of this sub-committee states, "As a first step in this inquiry a status study of science teaching in the Shaker Heights elementary schools has been undertaken. This study, under the direction of Dr. George Baird, may serve as a pattern for a survey in other areas." The second is a survey of the Ohio Colleges and Universities to learn what science is required in these schools for graduation of prospective elementary teachers. A pilot study in this area, under the direction of Dr. Charles V. Riley, has already been completed.

The fourth problem was a study of the undergraduate training of high school teachers in science and the kind of certification that seems best for them. New standards for the certification of science teachers in secondary schools in Ohio went into effect January 1, 1956. These new standards are now supposed to be among the highest of any state in the Union. The report of the subcommittee, written by Dr. John Coash, raises questions regarding the relative merits of the comprehensive major in science in contrast to the more specific majors in special science subjects. Concern is also expressed about the omission of certain science subjects, notably geology, from the comprehensive science major.

A fifth problem was a study of the fifth year of training in science for classroom teachers, both elementary and high school. The report of the sub-committee submitted by Dr. James McGrath indicates that the committee reached general agreement on four points under consideration, mild agreement on one and marked disagreement on another. The question that brought about the furor is as follows: Can courses with few or no pre-requisites be given in special science departments in colleges and universities, to teachers who already have the bachelor's degree, for graduate credit. As the report of the sub-committee says, "This cleavage is probably present among all college science professors and is, perhaps, not responsive to compromise."

The committee is unanimously of the opinion that this good work should be continued. It recommends that the present committee be continued or another one be appointed to carry on the work. Some undertakings are well under way but not yet completed.

Respectively submitted,

HARRY A. CUNNINGHAM, *Chairman*

REPORT OF THE RESOLUTIONS COMMITTEE

Be it resolved that the members of The Ohio Academy of Science express to the Administration of Bowling Green State University, to Dr. J. R. Coash, chairman of the local committee on arrangements, and to the several members of his committee, their appreciation of the excellent facilities and thoughtful hospitality which have contributed greatly to the success of this, the 66th annual meeting of the Academy. Be it further resolved, that the members of The Ohio Academy of Science express to Dr. Ralph W. Dexter their appreciation of his work as Secretary, a position from which he is retiring after three years of tireless and efficient service.

Respectfully submitted,

RALPH V. BANGHAM
WILLIAM H. SHIDELER
WALTER C. KRAATZ, *Chairman*

REPORT OF THE NECROLOGY COMMITTEE
for the Period of April, 1956 to April, 1957

During this interval six members have died. The necrology report for 1955 recorded seven deaths while that for 1956 reported ten. The obituaries accompanying this report include three for men who died in 1955 but whose deaths did not come to the attention of the Necrology Committee until after the April, 1956 meeting. Concerning one deceased member, John W. Magley of Cincinnati, who died in 1955, the chairman received no reply to his letter requesting biographical material; and one member, John P. Baker, died in an automobile accident in Columbus, Ohio, late in March 1956. No reply furnishing biographical data has been received up to April 18, 1956.

From the accompanying ten obituaries, we deduce the following items of interest: two were octogenarians; two in their seventies; two in the sixties; and two in the fifty-year group. The average age was sixty-six. As to cause of death, heart failure claimed at least three; uremia one, and another died of pneumonia while suffering from cancer. There were three deaths of which your committee was unable to learn the exact cause.

Respectfully submitted,

JOSEPH T. MADDOX, *Chairman*
H. H. M. BOWMAN
PAUL ROTHMUND

HAROLD JOHN KERSTEN

Professor of Biophysics and Fellow of the Graduate School of Arts and Sciences at the University of Cincinnati. Fellow of the Zoology Section of The Ohio Academy of Science.

Dr. Kersten was born in Carroll County, Illinois. He received his Bachelor and Master of Science degrees in electrical engineering from the University of Wisconsin in 1923 and 1924; Master of Arts degree in mathematics from the University of Chicago in 1926, and Doctor of Philosophy in physics from the University of Cincinnati in 1937. He taught at the University of Cincinnati from 1926 until the day of his untimely death, March 3, 1955. Dr. Kersten leaves a widow, Dorothy Meader Martin Kersten.

As a biological physicist, Dr. Kersten had conducted many significant research projects. He published more than 80 papers in American scientific journals and held several patents, two of which were assigned to the University of Cincinnati and one to the University of Cincinnati Research Foundation, of which he was a trustee. He also served as a consultant for several industries.

Dr. Kersten was a Fellow of the American Physical Society, American Association for the Advancement of Science, and The Ohio Academy of Science. He held membership in the American Chemical Society, American Mathematical Society, American Society of Plant Physiologists, Engineering Society of Cincinnati, and American Association of University Professors.

He was buried March 5, 1955, in Spring Grove Cemetery, Cincinnati, Ohio.

AMOS HENRY HERSH

Biologist, Professor of Biology at Western Reserve University since 1946 and a member of the faculty since 1923.

Dr. Hersh was born in Quarryville, Pennsylvania, on November 2, 1891. He received his Bachelor of Arts degree in 1914, his master's degree in 1915 from Franklin and Marshall College, and his Doctor of Philosophy from the University of Illinois in 1922. In 1915 he went to Princeton as an assistant in the biology department. From there he went to Kansas State College as Instructor in Biology from 1916 to 1918. He was an instructor at Marquette Uni-

versity for the academic year 1918-1919. From there he became a fellow in zoology at the University of Illinois 1919-1922. He served as an instructor in zoology at the University of Michigan 1922-23, from which post he left to become Instructor in Biology at Western Reserve where he was named Assistant Professor in Biology in 1925, advanced to Associate Professor in 1936 and appointed Professor in 1946, which position he filled until his death August 28, 1955.

His alma mater awarded him an honorary Doctor of Science degree in 1946.

Dr. Hersh has done a large amount of research in the field of heredity and genetics and has written numerous articles for professional journals in these fields.

He was a member of the American Society of Zoologists, Genetics Society of America, the American Naturalists, Sigma Xi, the American Association for the Advancement of Science, and The Ohio Academy of Science.

On August 19, 1922, he married Roselle Karrer of Seattle, Washington, in Urbana, Illinois. Mrs. Hersh is Assistant Professor of Mathematics at Western Reserve. They have two sons, Charles Karrer, who is with the Armour Research Foundation and teaches chemical engineering at Illinois Institute of Technology; and Robert Tweed who is a biophysicist with the DuPont Company at Wilmington, Delaware.

JOHN LYON RICH

Professor and Head of the Department of Geology at the University of Cincinnati, from which he had retired at the end of the 1954-1955 academic year. Fellow of the Geology section of The Ohio Academy of Science.

Dr. Rich died of a heart attack at Logan, Ohio, on May 21, 1956, while on a trip for the Ohio Natural Resources Commission of which he was a member. He had suffered a previous attack in December, 1953.

He was born in Hobart, New York, December 1, 1884, and after graduating from Hobart High School attended Cornell University where he obtained his bachelor's degree in 1906, his master's in 1907, and doctor's degree in 1911. He was Instructor in Geology at Cornell from 1909 to 1911; an instructor and associate in geology and geography, University of Illinois, from 1911 to 1918; consulting geologist and oil geologist for various companies from 1919 to 1931; Assistant Professor and Professor of Economic Geology, University of Cincinnati, from 1931 to 1935, when he became Research Professor of Geology.

Dr. Rich was elected an honorary member of the Association of Geology Teachers. He was a member of the Association of Petroleum Geologists, American Institute of Mining and Metallurgical Engineers, the Association of American Geographers, American Geophysical Union, Geological Society of America, and The Ohio Academy of Science.

Dr. Rich was noted chiefly for developing a new technique for making geological surveys from airplanes. He served on secret missions for the government of the United States and China during World War II to speed the Allied war effort by getting petroleum fuel. During World War I he was a captain in the military intelligence division of the U. S. Army.

He is survived by his widow, Nellie Barrett Rich; a son Ralph, with the Air Force, a daughter Catherine Louise Getchell, and six grandchildren.

WILLIAM PEARCE HOLT

Formerly Head of the Department of Geography and Geology, Bowling Green State University. Fellow in Geography, Ohio Academy of Science.

Mr. Holt was born June 7, 1875, at Geneva, Ohio and died of uremic poisoning June 12, 1955, and interred in Oak Grove Cemetery, Bowling Green, Ohio.

After leaving Geneva High School he entered Oberlin College and received his bachelor's degree in 1898. He did graduate work at the Universities of Chicago, Cornell, Columbia, and Michigan where he received his master's degree.

After teaching in high schools in Toledo, Ohio, and Newark, New Jersey, he went to Bowling Green State University in 1915 where he remained until his retirement in 1942. He also taught some classes in the University of Toledo and did personnel work at the Erie Proving Grounds during World War II.

Mr. Holt wrote *Practical Visualizing, The Geography of Ohio, Ecology of Isle Royale with notes on the vegetation of Isle Royale*, conducted a column in the Toledo Blade under the titles of "Nature is Interesting" or "Strange Animals of the World" and articles on Ohio geology and geography. He contributed articles to the Ohio Archaeologist, and left a nearly completed manuscript called *Indian Artifacts*.

He was a member of the Archeological Society of Ohio, Ohio Indian Relic Collector's Society, Trustee of the Ohio Retired Teacher's Association, Honorary life member and founder of the Toledo Naturalists' Association and a member of The Ohio Academy of Science.

He is survived by his widow, Mabel McLeary Holt, and two daughters, Ruth Holt Wolfe Falls, Wilma Holt Krohm, and two grandchildren.

FRANK W. REED

Dr. Frank W. Reed, Professor Emeritus of Ohio University, died November 22, 1956, at his home in Athens. Death came at the age of 75, following a brief illness.

A graduate of Peabody College, Tennessee, and the University of Virginia, Dr. Reed taught mathematics at Ohio University from 1923 until his retirement in 1951.

It was under his guidance, when he was Associate Professor of Mathematics and also a teacher of astronomy, that the university's first observatory was erected on North Hill. Dr. Reed supervised designing and equipping the building which housed the telescope.

Before coming to Ohio University, Dr. Reed taught at the University of Illinois for 12 years and at Cornell University for four years.

He was a member of Sigma Xi, the Mathematical Association of America, the American Mathematical Society, and a Fellow of the American Association for Advancement of Science and The Ohio Academy of Science.

He is survived by his wife Kate G. Reed; two sons, the Rev. Peyton D. Reed, Milford, and John Waller Reed, Columbus; and three grandchildren.

CHARLES CLIFFORD HUNTINGTON

Professor Emeritus of Geography, Ohio State University, and Fellow of the Geography section, Ohio Academy of Science.

Dr. Huntington, or Cliff as he was affectionately known to his close associates, was born January 12, 1873 on a farm in Clark County near Springfield, Ohio, and died November 29, 1956. He would have been 84 on January 12, 1957.

He received the B.Sc. degree from Antioch College in 1896. Later he attended Ohio State University and received his Ph.B. degree in 1902 and his master's in 1903. He was in residence at Cornell University 1904-1906 and was awarded his doctor's degree in 1915.

He began his teaching career as a youth of 17 or 18 in a country school in Clark County. From 1896 to 1901 he was principal of the high school in Fairfield, Ohio. At Cornell University he was an assistant in the Department of Political Economy and Finance, 1905-1906. During the next three years, 1906-1909, he was a special examiner of the Bureau of Corporations, U. S. Department of Commerce. He returned to teaching when he was appointed Assistant Professor in the Department of Economics and Sociology at Ohio State University. In 1914 he was advanced to the rank of professor. In 1922 he was given the opportunity to develop the Department of Economic and Social Geography and was named as the first chairman. The name was changed to Department of Geography in 1924 and he continued as chairman until 1934 when he gave up his administrative duties. At the end of the academic year 1942-43 he retired and became Professor Emeritus.

He was a member of the American Economic Association; American Association for the Advancement of Science; American Association of University Professors; American Geographical Society; Association of American Geographers; National Council of Geography Teachers; Ohio Archeological and Historical Society; Foreign Policy Association; and The Ohio Academy of Science.

Professor Huntington was married to Stella L. Barkman on June 27, 1906. She died on April 2, 1928. He later married Helen E. Hughes of Cedar Rapids, Iowa, on January 11, 1933. She survives him. He was interred in the family burial ground near Enon, Ohio.

LAWRENCE EMERSON HICKS

First Director of the Ohio Wildlife Research Station, Ohio Division of Conservation, Ohio Department of Natural Resources, and Fellow of the Zoology section, Ohio Academy of Science.

Dr. Hicks was 51 at the time of his death. He graduated from Otterbein College in 1928, and received his master's degree in 1929 and his doctor's degree in 1933 from The Ohio State University. He served as game ecologist with the Ohio Division of Conservation from 1929 to 1931, and as a forester and wildlife conservationist with U. S. Soil Conservation Service from 1934 to 1936. He had been an assistant in the biology department, Otterbein College, 1926 to 1928, and first an assistant and then an instructor at Ohio State from 1928 to 1930. He was Director of the Ohio Wildlife Research Station from 1936-1945.

At the time of his death Dr. Hicks was owner and operator of the Buckeye Apiaries at his Chatham Rd., Columbus, residence. In 1938 he was the United States delegate to the International Ornithological Congress, Rouen, France.

Dr. Hicks was a Fellow and former Secretary of the American Ornithologists' Union, a member and former officer of the Ohio Archeological and Historical Society, a member of Sigma Xi, and a Fellow of The Ohio Academy of Science.

He is survived by his widow, Thyra DeVies Hicks; a daughter, Mrs. Clement A. Hastie; a son Thomas E. D. Hicks at home.

He was buried in the family burial plot at Fredericktown, Ohio, on January 22, 1957.

JOHN H. HOSKINS

Chairman of the Department of Botany and Bacteriology at the University of Cincinnati College of Arts and Sciences; died in his sleep at his home on February 8, 1957; aged 61 years.

A native of Carmel, Indiana, Dr. Hoskins received the Bachelor of Science degree from Earlham College in 1919, and master's and doctor's degrees from the University of Chicago in 1920 and 1924.

Dr. Hoskins served with the United States Army 1917-1919, and with the War Department Training Branch, Quartermasters Corps, 1943-1945. He was Associate Editor and Editor for paleobotany of the *American Midland Naturalist*, and an assistant editor and co-founder of *Lloydia*, quarterly journal of biological science published by the Lloyd Library, Cincinnati, Ohio. He was a member of the board of Lloyd Library, and of the Cincinnati County Day School. From 1946 to 1953 he served as regional representative of Earlham College.

Dr. Hoskins was a member of Phi Beta Kappa and Sigma Xi; International Society of Plant Morphologists; Phytological Society; the Academies of Science of Ohio, Illinois, and Indiana, and President of the Botanical Society of America.

His widow, Gertrude Keller Hoskins, and three sons, John H. Jr., William K., and Robert L. survive.

Dr. Hoskins served on the Committee on Local Arrangements when the Academy met at the University of Cincinnati in 1928 and was Membership Secretary, 1930, and Executive Vice President of the Plant Science Section The Ohio Academy of Science in 1931.
